Alberta Ambient Air Quality Objectives

FACTS AT YOUR FINGERTIPS

Issued October 2007

The Alberta *Environmental Protection and Enhancement Act* (EPEA) allows Alberta Environment to develop ambient air quality objectives for all or part of the province to protect Alberta's air quality.

Alberta's objectives are equal to or more stringent than existing National Ambient Air Quality Objectives and Canada Wide Standards. Where there are no national objectives or Canada Wide Standards, Alberta has developed or adopted objectives that are among the most stringent in North America.

More information on Alberta's Air Quality Objectives is available online at www.environment.alberta.ca/

Air quality objectives are generally established for one-hour, 24-hour, and annual averaging periods. Occasionally, the underlying information requires that other averaging periods be used.

Objectives are based on an evaluation of scientific, social, technical, and economic factors.

CONSULTATION

Alberta Environment works with a variety of stakeholders, including other government departments, the scientific community, environmental organizations, industry an d the general public to review Ambient Air Quality Objectives.

For a copy of the *Alberta Ambient Air Quality Objectives Work Plan 2005-2008*, visit http://environment.gov.ab.ca/info/home.asp

REPORTING AIR QUALITY

The Ambient Air Quality Objectives are compared to actual air quality measurements to report on the state of Alberta's environment, special ambient air quality surveys and current air quality through the Air Quality Index.

INDUSTRIAL FACILITIES

All industrial facilities must be designed to meet Ambient Air Quality Objectives.

Objectives are used to establish approval conditions and can be used to assess compliance and evaluate performance.

ALBERTA'S AMBIENT AIR QUALITY OBJECTIVES (TABLE 1)

Substance	µg m^{-3} ‡	ppbv *	Basis	Effective
Acetaldehyde				1999
1-hour average	90	50	Adopted from Texas	
Acetic acid				1999
1-hour average	250	102	Adopted from Texas	
Acetone				1999, reviewed 2005
1-hour average	5,900	2,400	Adopted from Texas	
Acrylic acid				January 1, 2004
1-hour average	60	20	Adopted from Texas	
Annual average	1	0.34	Adopted from California	
Acrylonitrile				January 1, 2004
1-hour average	43	19	Adopted from Texas	
Annual average	2	0.9	Adopted from California	
Ammonia				1976, reviewed 2004
1-hour average	1,400	2,000	Odour perception	

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Substance	µg m^{-3} ÷	ppbv *	Basis	Effective
Arsenic				May 1, 2005
1-hour average	0.1	0.033	Adopted from Texas	
Annual average	0.01	0.0033	Adopted from Texas	
Benzene				1999
1-hour average	30	9	Adopted from Texas	
Carbon disulphide				1999, reviewed 2005
1-hour average	30	10	Odour threshold	
Carbon monoxide				1975
1-hour average	15,000	13,000	Oxygen carrying capacity of blood	
8-hour average	6,000	5,000		
Chlorine				1999
1-hour average	15	5	Adopted from Texas	
Chlorine dioxide				1999
1-hour average	28	1	Adopted from Texas	
Chromium				1999
1-hour average	1	-	Adopted from Texas	
Cumene				May 1, 2005
1-hour average	500	100	Adopted from Texas	
Dimethyl ether				1999
1-hour average	19,100	10,100	Adopted from Texas	
2-Ethylhexanol				May 1, 2005
1-hour average	600	111	Adopted from Ontario	
Ethylbenzene				May 1, 2005
1-hour average	2000	460	Adopted from Texas	
Ethyl chloroformate				1999
1-hour average	0.57	0.13	Stack emission limits	
Ethylene				January 1, 2004
1-hour average	1,200	1,044	Crop yield	
3-day average	45	40	Crop yield	
Annual mean	30	26	Conifers and perennials	
Ethylene oxide				1999
1-hour average	15	8	Adopted from Ontario	
Formaldehyde				1999
1-hour average	65	53	Adopted from Texas	
Hydrogen chloride				1999
1-hour average	75	50	Adopted from Texas	
Hydrogen fluoride				1999
1-hour average	4.9	6	Adopted from Texas	
Hydrogen sulphide				1975
1-hour average	14	10	Odour perception	
24-hour average	4	3		
Isopropanol				May 1, 2005
1-hour average	7,850	3,190	Adopted from Texas	

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Substance	µg m^{-3} ÷	ppbv *	Basis	Effective
Lead				**1999**
1-hour average	1.5	-	Adopted from Texas	
Manganese				**May 1, 2005**
1-hour average	2	0.89	Adopted from Texas	
Annual average	0.2	0.089	Adopted from Texas and California	
Methanol				**1999**
1-hour average	2,600	2,000	Adopted from Texas	
Methylene bisphenyl diisocyanate				**1999**
1-hour average	0.51	0.05	Adopted from Texas	
Monoethylamine				**1999**
1-hour average	1.19	0.6	Stack emission limits	
Nickel				**May 1, 2005**
1-hour average	6	2.5	Adopted from California	
Annual average	0.05	0.021	Adopted from California	
Nitrogen dioxide				**1975**
1-hour average	400	212	Odour perception	
24-hour average	200	106		
Annual average	60	32		
Ozone (ground level)				**1975, reviewed 2007**
1-hour average	160	82	Pulmonary function	
Particulate Matter				
Fine - 2.5 microns or less				**2007**
1-hour average	80		Canada Wide Standard	
24-hour average	30		Canada Wide Standard	
Total suspended				**1975**
24-hour average	100		Pulmonary effects	
Annual geometric mean	60			
Pentachlorophenol				**November 1, 2004**
1-hour average	5	0.44	Adopted from Texas	
Annual average	0.5	0.04	Adopted from Texas	
Phenol				**1999**
1-hour average	100	26	Adopted from Ontario	
Phosgene				**1999**
1-hour average	4	1	Adopted from Texas	
Propylene oxide				**January 1, 2004**
1-hour average	480	201	Adopted from Oklahoma	
Annual average	30	13	Adopted from California	
Styrene				**1999**
1-hour average	215	52	Adopted from Texas	
Sulphur dioxide				**1975, reviewed 1987**
1-hour average	450	172	Pulmonary function	
24-hour average	150	57	Begonia, bluegrass, aspen, forests	

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Sulphur dioxide - cont'd				1975, reviewed 1987
Annual average	30	11	Natural forests, lichens	
Sulphuric acid				1999
1-hour average	10	2.5	Adopted from Texas	
Toluene				May 1, 2005
1-hour average	1,880	499	Adopted from Texas	
24-hour average	400	106	Adopted from Michigan and Washington	
Xylenes				May 1, 2005
1-hour average	2,300	529	Adopted from Ontario	
24-hour average	700	161	Adopted from California	
Vinyl Chloride				1999
1-hour average	130	51	Adopted from Texas	

OTHER ALBERTA AMBIENT AIR QUALITY GUIDELINES (TABLE 2)

Parameter	Guideline	Effective
Dustfall	53 milligrams /100 cm^2 /30 days in residential and recreation areas 158 milligrams /100 cm^2 /30 days in commercial and industrial areas	1975
Coefficient of haze	90% of the readings/month shall be less than 1.0 COH unit	Pre 1970
Static total sulphation	0.50 mg SO_3 equivalent/day/100 cm^2 as a 1-month accumulated loading	Pre 1976
Static hydrogen sulphide	0.10 mg SO_3 equivalent/day/100 cm^2 as a 1-month accumulated loading	Pre 1976
Static fluorides	40 µg water soluble fluorides/100 cm^2/30 days	Pre 1976

† µg m^{-3} is the weight, in micrograms, of the substance in one cubic meter of air.

* Standard conditions of 25°C and 101.325 kPa are used as the basis for conversion from µg m^{-3} to ppbv (parts per billion by volume) or from mg m^{-3} to ppmv (parts per million by volume).

FOR MORE INFORMATION

For more information on Alberta's Ambient Air Quality Objectives, contact:

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